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☐ 1. Document ID: US 20030135846 A1

AB: A geometric model comparator is provided, which includes processing circuitry, memory, and comparison circuitry. The processing circuitry is configured to generate a target model from a source model. The memory is configured to store the source model and the target model. The comparison circuitry is configured to identify selected points from the source model, create corresponding selected points in a target model, and compare the selected points from the source model with the selected points from the target model to identify one or more selected points from the target model that fall outside of a predetermined tolerance range with the respective one or more points from the source model. A method is also provided.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Des

☐ 2. Document ID: US 20030074174 A1

AB: Methods, apparatus and computer program products provide efficient techniques for designing and printing shells of hearing-aid devices with a high degree of quality assurance and reliability and with a reduced number of manual and time consuming production steps and operations. These techniques also preferably provide hearing-aid shells having internal volumes that can approach a maximum allowable ratio of internal volume relative to external volume. These high internal volumes facilitate the inclusion of hearing-aid electrical components having higher degrees of functionality and/or the use of smaller and less conspicuous hearing-aid shells. A preferred method includes operations to generate a watertight digital model of a hearing-aid shell by thickening a three-dimensional digital model of a shell surface in a manner that eliminates self-intersections and results in a thickened model having an internal volume that is a high percentage of an external volume of the model. This thickening operation preferably includes nonuniformly thickening the digital model of a shell surface about a directed path that identifies a location of an undersurface hearing-aid vent. This directed path may be drawn on the shell surface by a technician (e.g., audiologist) or computer-aided design operator, for example. Operations are then preferably performed to generate a digital model of an undersurface hearing-aid vent in the thickened model of the shell surface, at a location proximate the directed path.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Des

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☐ 3. Document ID: US 20020120920 A1

AB: A computational geometry server is provided that includes a server, a communication link, at least one client, and an interrupt interface. The server has processing circuitry and an operation manager. The operation manager is configured to compare source geometric data in a source geometric model with target geometric data in a target geometric model. Furthermore, the operation manager is operative to identify discrepancies in the geometric data between the source geometric data and the target geometric data. The at least one client communicates with the server over the communication link. The interrupt interface is operative to notify a user of the presence of an inability to automatically generate an accurate representation of the source geometric model in the target geometric model. A method is also provided.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Des

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☐ 4. Document ID: US 6718291 B1

AB: A method and apparatus for mesh-free engineering analysis of geometric models is described. The method and apparatus, which are preferably software-based and implemented on personal computers or other programmable processing devices, represent geometric models by implicit mathematical functions. The implicit functions allow interpolation of all desired boundary conditions over the geometry without meshing, and the boundary conditions may then may be combined with a piecewise continuous model of the solution structure (i.e., the analysis problem). By solving for elements of the solution structure (its basis or coordinate functions) which satisfy the given boundary conditions either exactly or approximately, the solution structure will define the behavior and boundary conditions (exactly or approximately) throughout the geometric model.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Des

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☐ 5. Document ID: US 6603473 B1

AB: A method of forming detail data corresponding to a vertex of a polygonal mesh representation of an object surface. The mesh representation has a limit surface, and the vertex has a limit point on the limit surface. The detail data for the vertex relates to the shape of the limit surface near the limit point corresponding to the vertex, and may capture detail about the object surface which is not captured by the mesh representation. The method may involve forming difference or detail data for one or more vertices from the group comprising the vertex in question and one or more neighboring vertices, weighting the resulting difference or detail data with prescribed weights, and deriving the detail

data for the vertex in question from the weighted difference or detail data. The difference data for a vertex is the difference between the vertex as mapped onto the object surface and the limit point for the vertex on the limit surface.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Des

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☐ 6. Document ID: US 5283860 A

AB: A system and method is provided for displaying trimmed surfaces on a computer graphics system. The present invention tessellates a three-dimensional surface into triangles and determines whether a trimming curve intersects any triangles. If an intersection occurs, a polygon trimming mask is formed by performing an exclusive OR operation and rendering the polygon into a mask plane. The XOR operation sets the bits in the mask plane corresponding to the trimming mask to logical 1. The rendering hardware then compares the bits in the mask plane with the bits in the frame buffer and draws those pixels which correspond to the bits set to 1 in the mask plane. Since, the trimming mask is a polygon the rendering hardware can perform shading, or lighting calculations using values for points which are contained on the tessellated triangle. In this manner, consistent lighting of a trimmed surface can be achieved. Additionally, the present invention provides for the formation of multiple trimming masks when multiple trimming curves intersect a tessellated triangle. The multiple trimming masks are sequentially XORed into the mask plane and the corresponding pixels are then drawn.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. Des

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☐ 7. Document ID: US 4999789 A

AB: A graphics accelerator responds to commands from a computer in a graphic system by storing the definitions of nonuniform rational B-spline patches and their associated trimming curves. The graphics accelerator then produces device coordinates for trimmed polygons computed for each patch and sends these polygons to a display. The B-spline definitions of the trimming curves in the uv parameter space of each patch are converted to approximating short straight line segments. Untrimmed polygon vertices, the end points of the straight line segments and the intersections of the straight line segments with subspan boundaries corresponding to polygon edges are kept in a data structure of linked lists of vertex tables. The data structure is traversed to determine new polygon vertices for trimmed polygons. The trimming mechanism is compatible with recursive subdivision of patches to overcome practical limitations on the number of trimming curves that may be associated with each patch. The length of the straight line segments of the trimming curves is adjusted to compensate for less than ideal parameterization of the trimming curve functions. Associated with each trimming curve within a patch is information about the position of that trimming curve in the span. As each polygon for that patch is generated, those trimming curves that are clearly outside the clip limits for that polygon are excluded

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